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Chapin & Huang/BWC  
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METHODS AND APPARATUS FOR REPRESENTING RESOURCES IN A  
COMPUTING SYSTEM ENVIRONMENT

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RELATED APPLICATIONS INCORPORATED BY REFERENCE

The present invention relates to co-pending United States Patent Application entitled "METHODS AND APPARATUS FOR GRAPHICALLY MANAGING RESOURCES", having Attorney Docket No. EMC01-07(01042), filed on the same day  
20 as the present Application. The present invention also relates to co-pending United States Patent Application Serial No. 09/547,510 entitled "METHODS AND APPARATUS FOR PRESENTING INFORMATION TO A USER OF A COMPUTER SYSTEM", having Attorney Docket No. EMC00-02(00012), filed on April 12, 2000. These related Patent Applications are assigned to the assignee of the present invention. The entire  
25 teachings and contents of these reference Patent Applications are hereby incorporated by reference in their entirety.

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## FIELD OF THE INVENTION

The present invention generally relates to computer and software systems for managing resources in a computing and/or storage system environment, and more particularly, to mechanisms and techniques which provide representations of such resource via a graphical user interface.

## BACKGROUND OF THE INVENTION

Many types of conventional computing systems operate software programs that include a graphical user interface (GUI) that allows a user of the computing system to graphically view, manage, control and/or configure various types of hardware or software resources in an environment in which the computing system operates. The graphical user interface may allow, for example, a user of the computing system to interact with the computing system and its associated software applications, filesystem(s), data, devices and/or peripherals. The computing system may operate in a networked environment and the software program may be a network management application that provides the graphical user interface to allow the user to remotely manage and control other computing systems and/or resources that are remotely coupled via a network. Resources that may be graphically managed in this manner can include storage system and device resources such as disks, file systems, volumes and the like, network device resources such as switches, host computer system resources such as clients or servers, and software applications that operate on one or more of such components. A user views, manages, configures or otherwise operates on such resources via manipulation of a representation of the resources that the software application provides (e.g., displays or renders) on the graphical user interface.

Conventional resource management software applications (e.g., network or device manager software) typically provide a representation of each resource on the graphical user interface using a respective icon paired with a resource identifier. The icon provides a small graphical representation of the resource while the resource identifier is a text or character string name for the resource. The software application displays the resource identifier in a fully qualified manner. A fully qualified resource identifier conveys the

naming scheme that the software or operating system imposes resources. For example, a fully qualified resource identifier may include a string of alphanumeric characters (e.g., text and/or numbers) that indicates a specific file and path name for that file in a file system in order to uniquely identify each resource.

5           In many computing system environments, resources have hierarchical relationships with other resources (e.g., files in a file system hierarchy). Due to such hierarchical relationships and in order to provide uniqueness for each resource identifier, a fully qualified resource identifier for a resource in a conventional resource management application includes a "hierarchy location" such as a pathname for the resource in the  
10   resource hierarchy (e.g., the directory or folder path of a file in a file system hierarchy) followed by the resource's "simple name," which is the name of the resource (e.g., the file name of the file in the file system). As an example, if the resource is a text file having a simple name "myfile.txt" and has the hierarchical file system location "/user/person/home/textfiles/" then a fully qualified resource identifier for this resource  
15   might appear as "user/person/home/textfiles/myfile.txt" in the graphical user interface.

Conventional resource management applications that include graphical user interfaces that display such naming schemes for resources typically allow the user to select or modify the simple name for a resource. For example, the user might be allowed to rename the file "myfile.txt" to "ourfile.txt." However, the resource management  
20   application typically automatically assigns the hierarchy location portion of the fully qualified resource identifier based upon where the resource is actually located in the resource hierarchy. A user can change the hierarchy location portion of a fully qualified resource identifier by either changing the name(s) of the directory(s) or folder(s) that make-up the hierarchy location of the resource in the resource hierarchy, or by actually  
25   moving the resource (e.g., the file) to a new location (e.g., a new directory) within the resource hierarchy.

The Windows series of operating systems (e.g., Windows 95, Windows 98, Windows NT, Windows 2000, collectively referred to herein as Windows), manufactured by Microsoft Corporation of Redmond Washington, U.S.A., provides a resource  
30   identification and naming scheme that operates in a manner similar to that described